

Abstract Submitted
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**Effect of Ligand Molecular Weight and Nanoparticle Core Size
on Polymer-Coated Gold Nanoparticle Location in Block Copolymers**

JOSHUA PETRIE, UC Santa Barbara, BUMJOON KIM, UC Berkeley, GLENN FREDRICKSON, ED KRAMER, UC Santa Barbara — Gold nanoparticles modified by short chain polymer thiols [Au-PS] can be designed to strongly localize in either domain of a polystyrene-*b*-poly(2-vinylpyridine) [PS-PVP] block copolymer or at the interface. The P2VP block has a stronger attractive interaction with bare gold than the PS block. Thus, when the areal chain density Σ of end-attached PS chains falls below a critical areal chain density Σ_c the Au-PS nanoparticles adsorb to the PS-*b*-P2VP interface. The effect of the polymer ligand molecular weight on the Σ_c has been shown to scale as $\Sigma_c \sim ((R+Rg)/(R^*Rg))^2$, where R is the curvature of the Au nanoparticle core radius. To test this scaling relation for Σ_c further we are synthesizing gold nanoparticles with different core radii and will present preliminary results on Σ_c as a function of R .

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